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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/878,180	06/12/2001	Ikuya Kikuchi	041514-5125	1408

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EXAMINER

AGUSTIN, PETER VINCENT

ART UNIT PAPER NUMBER

2652

DATE MAILED: 12/19/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,180

Applicant(s)

KIKUCHI ET AL.

Examiner

Peter Vincent M Agustin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:

Page 10, line 18: Change "exsist" to --exist--.

Page 16, line 6, Change "grass press" to --glass press--.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 3, 5 and 6 rejected under 35 U.S.C. 102(e) as being anticipated by Owa et al. (US-6564009).

Figure 8, element 17A and column 12, lines 45-52 disclose "a molded glass objective lens" of claim 1; figure 7 discloses "an optical pickup device characterized by comprising a molded glass objective lens" of claim 5; and figure 1 discloses "an optical

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recording/reproducing apparatus characterized by comprising an optical pickup device having a molded glass objective lens" of claim 6. Lens 17A in figure 8 shows the claimed "first surface having a center symmetric convex surface shape at least in a range of an optical beam passing therethrough", "second surface having a center symmetric effective surface shape at least in a range of an optical beam passing therethrough on a side opposite to said first surface", and "center symmetric cylindrical side surface crossing with said first surface" of claims 1, 5 and 6; and "a circular reference plane surface which does not shield a transmitting luminous flux refracted at said first surface and is perpendicular to an optical axis, within a border surface which would exist assuming that said virtual lens portion is overlapped with said molded glass objective lens so as to correspond to said first and second surfaces and said cylindrical side surface" (claim 2). Due to the presence of the cylindrical section of Owa et al's lens, the center curvature radius of the first surface must be greater than $\sqrt[3]{(3V_1/4\pi)}$, where V_1 is the lens volume, i.e., " $\sqrt[3]{(3V_1/4\pi)} \leq r_A$ " where " V_1 denotes the volume of said molded glass objective lens" of claims 1, 5 and 6. This follows from the fact that the radius of a sphere would be equal to $\sqrt[3]{(3V_s/4\pi)}$, where V_s is the volume of a sphere. Due to the presence of the notched section of the lens 17A, the center curvature radius must be less than $\sqrt[3]{(3V_2/4\pi)}$, where V_2 is a virtual lens portion volume, i.e., " $r_A < \sqrt[3]{(3V_2/4\pi)}$ " where " V_2 denotes the volume of a virtual lens portion" of claims 1, 5 and 6. This follows from the fact that the virtual lens portion includes the notched section of Owa et al's lens and the light beam of Owa et al. is focused within the actual

lens 17A. Column 13, lines 40-51 disclose "comprising such a shape that the curvature radius is minimum outside an effective diameter of said second surface" (claim 3).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Owa et al. as applied to claim 1 above, and further in view of Knight et al. (US-6243350).

Owa et al. in the optical disc recording art, discloses all the claimed features as noted in the 102 rejection above, except for the claimed "circular reference cone surface centering an optical axis which does not shield a transmitting luminous flux refracted at said first surface, within a border surface which would exist assuming that said virtual lens portion is overlapped with said molded glass objective lens so as to correspond to said first and second surfaces and said cylindrical side surface" (claim 4).

Knight et al. in the optical storage art, discloses "circular reference cone surface centering an optical axis which does not shield a transmitting luminous flux refracted at said first surface" in figure 7.

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to substitute the "circular reference cone surface centering an optical axis which does not shield a transmitting luminous flux refracted at said first

surface" of Knight et al. to the objective lens of Owa et al. the motivation being to create an optical head of reduced weight and dimensions.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kittaka et al. (US-6078431) disclose an object lens system with a first surface and a second surface, which surfaces have a range for radius of curvature.

Otsuki et al. (US-6356398) disclose a lens having a diaphragm structure at an outer edge portion on an incident side thereof.

Ishibai et al. (US-5087115) disclose an aspherical glass lens element suitable for an object lens element of a disk device.

Yamamoto et al. (US-6594204) disclose a lens holder capable of securing plural lenses in an adjustment-free fashion and to achieve relative positioning between the lenses to high precision.

Manabe (US-5467225) discloses an objective lens for an optical disk drive. This invention provides reduction in the weight of the optical system.

Tanaka et al. (US-5684641) disclose an objective lens for an optical head wherein astigmatism is added on axial wavefront aberration so that off-axis astigmatism can be cancelled by axial astigmatism.

Lee et al. (US-5729393) disclose an optical flying head with solid immersion lens having raised central surface facing medium.

Otsubo et al. (US-6081496) disclose an objective lens which surface is formed with a convex shape and has a radius of curvature of limited range.


Natsuno et al. (US-5805355) disclose resin lenses for use in a laser optical system, which resin lenses are low cost acrylic and shaped according to desired refractive index and radius of curvature.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent M Agustin whose telephone number is (703) 305-8980. The examiner can normally be reached on Monday thru Friday 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Peter Vincent Agustin
12/01/2003



W. R. YOUNG
PRIMARY EXAMINER